

occurs because the piano is a "doubly percussive instrument," they say. Not only does a hammer strike against a string, where the hammer's speed determines the loudness and basic tone color, but the impact of the piano key upon the keypad also adds "noise." This noise is conducted from the keypad to the sounding board by way of the piano case. The blend of these two sounds—the string's ring and the keypad's thud—produces the subtle tone qualities that concert pianists try to achieve.

Taking advantage of this new insight, Alberti spent five years improving the touch and tone of a Steinway concert grand piano. This involved changing a piano key's balance and responsiveness so that it more faithfully reproduced a pianist's motions. It also meant controlling all the noises that could be generated within a piano and enhancing desirable qualities.

The result is a piano that allows "the musician to express even more subtle and delicate music, especially in the quieter ranges," says Alba. The softest sounds can range from a distant, bell-like tone to a feather-light, sighing sound, while the loudest sounds can be harsh and clangorous or rich and full. A recent test involving more than 100 piano students at the Julliard School in New York showed considerable enthusiasm for the new piano's touch and responsiveness. Alberti is now ready to apply her techniques to modify existing concert pianos or to begin building "a new generation of concert instruments."

Life in a maddening crowd

Living in crowded quarters is associated with poor mental health. These effects are generally explained by excessive social obligations and lack of privacy. Now Michael Hughes of the Virginia Polytechnic Institute in Blacksburg provides a more detailed analysis of crowding's mental health effects. Working with Walter R. Gove of Vanderbilt University in Nashville, Tenn., Hughes uses the number of persons per room occupying a residence as a measure of crowding. He finds that the type of household and the role of a person within a household can contribute to how severely crowding exerts its negative effects.

Crowding has the greatest negative effects on the mental health of unmarried parents (primarily women) living with their children. The effect of crowding is moderated when there is another adult, for example a grandparent or cohabitant, in the household. Among married couples with children, crowding more strongly affects women than men. Among unmarried adults without children, crowding is not a significant predictor of mental health, Hughes finds, although he cautions there were few such people in his sample.

Health effects at a toxic waste site

More than a decade ago, a now-bankrupt chemical treatment company mishandled a large volume of chemical wastes on a 5-acre site within 400 feet of a densely populated, residential neighborhood in Lowell, Mass. Three years ago, the state government finished removing hundreds of barrels, many of them leaking, from the site but left behind the contaminated soil. A new study, directed by David M. Ozonoff of the Boston University School of Public Health, now reveals that residents of the "target" area show a higher incidence of respiratory ailments than people living in a "control" area farther away. However, the results also show that the target population did not experience an unusual degree of reproductive problems or of cancer.

Ozonoff concedes that target-area residents may have had better recall of symptoms than those in the control area. Nevertheless, he says, "It is not possible at this time to say that the waste site is or is not the cause of these findings, but the results are consistent with such an effect.... Speedy abatement of any remaining exposures from the site is indicated."

RNA twist in cancer therapy

When researchers talk about "the mismatched inducer," they're not discussing a mystery novel or summer movie. They're referring to Ampligen (poly [I]-poly [C₁₂U]), a potential anticancer drug that stimulates the body to make interferon by mimicking viral infection. In its first clinical trials, seven of 12 cancer patients treated with Ampligen "have shown some level of antitumor response," reports William A. Carter of Hahnemann University in Philadelphia, who helped develop the drug. Hahnemann spokeswoman Phyllis Fisher cautions that these "Phase I" clinical trials were designed to test Ampligen for side effects and do not establish its therapeutic value.

By enhancing the body's immunological defenses, the drug may help the body "control and eliminate residual tumor cells," according to Ampligen's coinventor Paul O.P. Ts'o of Johns Hopkins University in Baltimore. The key to Ampligen's success as a "biological response modifier" is its charade: It's a synthetic double stranded (ds) RNA. RNA is usually single stranded in cells, but certain viruses make dsRNA during part of their infection cycle. Thus when cells recognize dsRNA, they "interpret" it as a viral invasion and mount an immune response, which includes interferon production, says James J. Greene of Catholic University of America in Washington, D.C., who collaborates with Ts'o. Interferon shouldn't get all the credit for Ampligen's apparent anticancer properties, Greene notes. "Double stranded RNA will also inhibit cell division and that mechanism of action is not mediated through interferon," he says. "Its spectrum of action may overlap interferon's, but it definitely has its own special activity."

High lead doses inhibit male hormone

Researchers concerned about the effects of workplace contaminants on male reproduction usually focus on fertility, but the damage may be more subtle, reports Larry Ewing of Johns Hopkins School of Public Health in Baltimore. He found that male rats exposed to high doses of lead in their drinking water were able to impregnate females, but showed a sharp drop in production of testosterone, a hormone crucial to differentiation of embryonic reproductive organs and important in adult sexual behavior. Low doses of lead—below levels that induce symptoms of lead poisoning in humans—do not trigger the hormone drop. Still, the results hint that current tests for toxic effects on the reproductive system may not be sensitive enough, Ewing says.

Food and drug capsules

- Diabetic patients given large daily doses of the sugar substitute aspartame, equivalent to levels consumed in 14 cans of diet soda, reported fewer side effects than subjects given an inert placebo in a study at the University of Illinois in Chicago. "More than twice as many adverse reactions were reported by those on placebo," Jeanine K. Nehrling told a meeting of the American Diabetes Association (ADA) this week. Nehrling and David L. Horwitz studied 62 diabetics for 18 weeks, including insulin dependent and non-insulin dependent patients, in their quest to help confirm or refute anecdotal reports that aspartame is associated with headaches, dizziness and mood changes (SN: 8/27/83 p. 134). ADA officials concur with the researchers that the sweetener is a useful sugar alternative for diabetics, "provided it is not used in excessive amounts."

- Claims by more than 400 Britons against the Indianapolis-based Eli Lilly Co. regarding its anti-arthritis drug Oralflex have been dismissed by an Indiana circuit court. Though 61 deaths have been linked to use of the drug in Britain (SN: 12/3/83, p. 361), the judge ruled the suits should have been brought there where access to evidence and expertise in applying the relevant British law would be better.